RC Protocols Explained: SBUS, CRSF, PWM, FPort and Mo

Published: 1st April 2021 | **Last Updated on** 13th June 2021

When talking about radio receiver (RX) and transmitter (TX) protocols, you will surely encounter some confusing acronyms like PWM, CRSF, SBUS, DSMX, FPort etc. In this guide, I will explain all the comm protocols and the differences between them.

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5. PPM – Pulse Position Modulation
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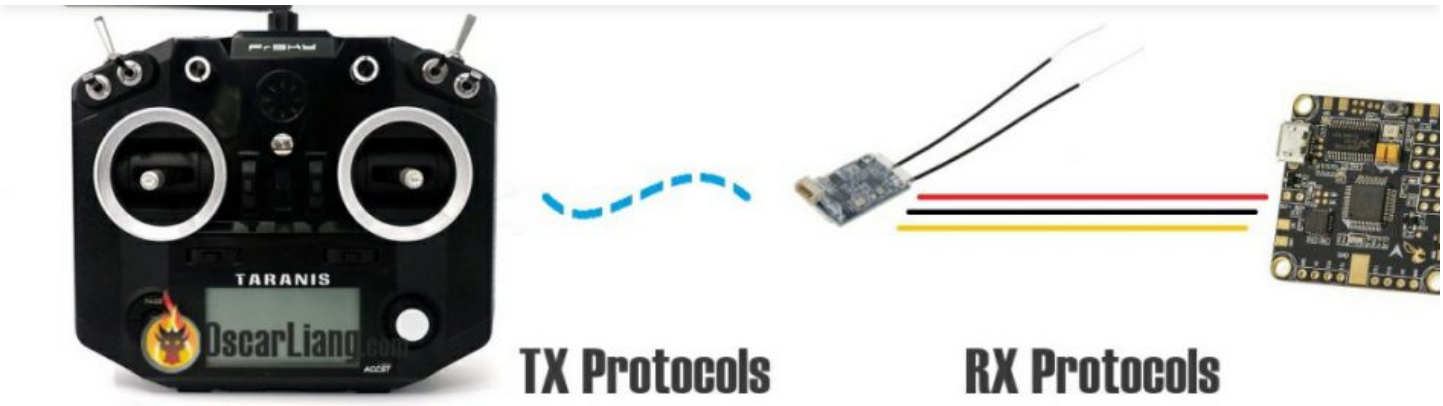
en components. They are used in radio communicatio
ontrolled vehicles. It's important that you buy things tha
ey just won't work.

RC protocols can be divided into two groups:

- **RX Protocols** – communication between the radio receiver (RX) and flight controller (FC)
- **TX Protocols** – communication between the radio transmitter (TX) and RX



Some manufacturers might share some TX and RX protocols, but most of the times they use their owr

nd receiver is wireless. Manufacturers all have their ow

ocols depends on hardware. Here is a list of common T

- DSMX (Spektrum)
- AFHDS (Flysky)
- AFHDS 2A (Flysky)
- A-FHSS (Hitec)
- FASST (Futaba)
- Hi-Sky (Deviation / Devo)

Frsky has two TX protocols, ACCST and ACCESS. Note that for ACCST, there is the older V1 and the V2, and the two are not compatible.

ACCST:

- **D16**: for X-series receivers, e.g. X4R-SB, R-XSR, XM+
- **D8**: for D- and V-series receivers, e.g. D4R-II, D8R-II+, V8FR-II, VD5M, etc
- **LR12**: for the long range receiver L9R

ACCESS: Frsky's latest air protocol, New Frsky Air Protocol – ACCESS

Spektrum's DSM2 and DSMX

DSM2 and DSMX are the two TX protocols used by Spektrum radios.

nterference and other transmitters transmitting on the s
art-up in case the primary frequency fails. This greatly
nnels becomes unusable you may still lose the connec

which also uses the same encoding scheme. The diff
quency channel in case of cut out within a couple of
ce the glitch.

ay from sources of radio interference (such as WiFi,
should work just as well as DSMX, but DSMX for sure

RX Protocols

The communication between radio receiver and flight controller is wired. Some RX protocols are unive used in receivers from different manufactures, but some can be exclusive to certain brands. Here is a common RX protocols:

- PWM (universal)
- PPM or CPPM (universal)

- XBUS (JR)
- MSP (Multiwii)
- CRSF (TBS Crossfire)
- SPEKTRUM1024 (Spektrum DSM2)
- SPEKTRUM2048 (Spektrum DSMX)
- FPort (Frsky)
- SPI_RX (universal) – More detail in this article

PWM – Pulse Width Modulation

PWM stands for pulse width modulation, the length of the pulse specifies the servo output or throttle p

gital and analog signals. The length of the signal pulse

icro seconds), with 1000µs being the minimum & 200

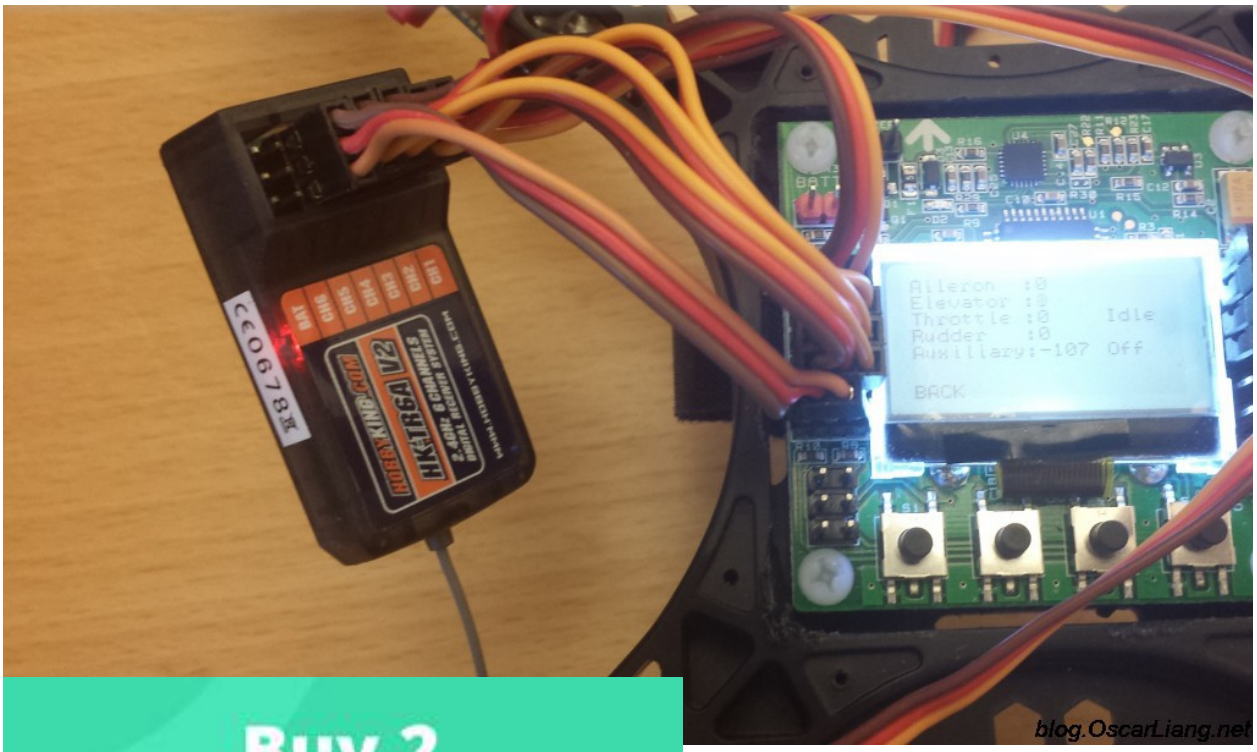
l protocol. Back in the days when there was no flight

servos and ESC directly with standard PWM signal.

s, as you have one servo cable for every channel. And

when using an FC, which pass all the channels through

f not better.



tion

PM signal is basically a series of PWM signals sent on ently.

ne single wire is needed for several channels. So typic nd signal wires for up to 8 channels.

me, it's not as accurate or jitter-free as serial commun

at uses only 3 wires (signal, power, ground) for multipl
lomain, serial protocols are completely digital which m
.

As the name suggests, serial protocols require a serial port on the flight controller (aka UART).

SBUS

Aka S.BUS or Serial BUS, is commonly used by Futaba and FrSky. It supports up to 16 channels usin
one signal wire. SBUS signal should be connected to the RX pin of an UART.

Note that the SBUS signal in Frsky's receivers is inverted, and therefore (normally) on F1 and F4 FC, f

to any UART you want.

CRSF (Crossfire)

CRSF is developed by TBS for their Crossfire RC system. It's similar to SBUS or other digital RX to FC protocols.

The main advantages include fast update rate and two-way communication capabilities, allowing featu such as hassle free Telemetry to be injected into the radio link with no additional UART port required.

IBUS – By Flysky

IBUS is flysky's serial protocol. It's a two way communication which means it can send and receive dat port for servo data output and one port for sensors.

annels in one signal wire. One of the advantages is th

software. Basically it allows you to use MSP comman ignal cable.

lopers. Normally, control signal and telemetry data req separate connections, but FPort manages to combine them into one single bi-directional signal, which it more compact and easier to manage.

Unlike Frsky's SBUS which is inverted, FPort is compatible with F4 flight controllers UART without add inverters or hacks.

You can learn more about FPort and how to setup here.

How to Choose the Right RC Protocols?

If you are buying a pre-built drone, then you don't have to worry about it at all. But if you are building fr scratch, then your decision would affect what you should/can buy. Just pick a radio transmitter you like then find a compatible receiver, preferably support one of the serial protocols.

Take a look at what gear I use in this post.

Latency

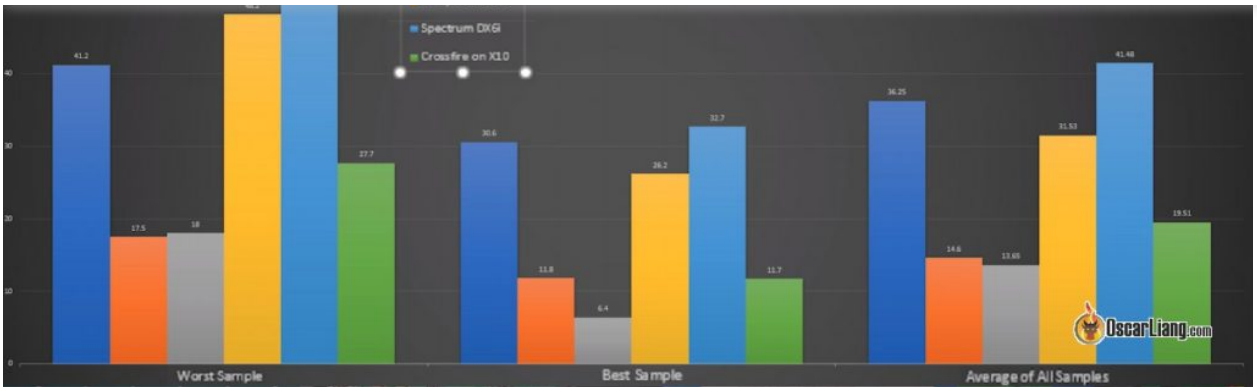
We do not have the proper equipment to test TX and RX latency yet, but fortunately our friend Dronem Youtube have been doing this type of testing for many different kind of TX and RX.

In a radio control system, the latency happens in multiple places. There is latency between your sticks RF module on the TX (before it's transmitted through the air), between transmitter and receiver (signal here is latency between the receiver and your flight co

e testing video:

k that's all the reason in choosing a radio. You should consider the reliability of the RC connection, the features of the radio and ergonomics. But really, can extra latency affect someone's flying? Maybe, maybe not.

And there is speculation that the latency of the Flysky system actually increases with range while that is more consistent. Hopefully someone will test and confirm.



Edit History

- March 2015 – Article created for RX protocols
- July 2017 – expanded list of TX protocols

r

Building Sub-250 6S 5inch FPV Drone, E
X-Knight 5" To

LEAVE A COMMENT

Your Comment

Sign me up for the newsletter!

for moderation before appearing.

SUBMIT

83 COMMENTS

PHIL

14th January 2022 - 7:07 am

excellent!

brings lots of light into the many things that form our universe of radio controlled models.

thank you very much for your terrific input.

hese articles, generally i like to read and understand in

ite and all articles are opportunity to learn

details in your article. I own a Flysky i6 radio along wit

receivers.

It works great on all my helis with a tail gyro and flybar. I am struggling to hook up a microb

flybarless system to this receiver, however, beast x does not initialize. I tries a clone TGZ 3

system as well, however, the exact same issue. Seems the ‘receiver type’ selection is the i

Could you please suggest what should I select in the receiver type for Flysky i6, many than

advance.

22nd August 2021 - 12:44 pm

Brilliant post, thank you!

ANDREW G PERRIN

12th August 2021 - 2:10 am

Oscar Liang, do you know what my new HiTec Flash 8 means in the manual, p.27…SLT technology… In HiTec's words "This allows you to fly numerous Tx-Ready models on the m
Do you know how I can learn what Rxs use SLT???
Good article!

OLAF

rotocol from Graupner which is also supported in beta
rmany who uses that because it is very popular there

emesh video?
ease cite the source).
lab measures and little in field measures, so I would b
curious
on how the numbers are obtained.
Also it is not clear from your table if these are TX or RX dependent.
i mean, I agree with you that a couple of milliseconds do not make you a better pilot ;)
I am on the beginner side as pilot.
I am using now a mix of everything but in my past spektrum was quite good.

for the transmitters.

Anyway …

A JB interesting video is this: youtube.com/watch?v=Z23_uaGJfv8

A+

Fabio

DAVID CHLYSTEK

3rd March 2021 - 2:44 am

are there any touch screen HMI's that support S bus ?

RAD BUDA

g to build a mini quad on Omnibus f4 v3 board. I have work flawlessly on other FC's. In fact, one of Rx work Inav and now I can't connect to any of my RX's . tried NAV 2.4 . changed all settings back and forth.Inav or sidering of scrapping omnibus business and buying dif

BRETT BALISTRERI

15th October 2020 - 1:11 pm

i have a futuba 9 super with dft module and a x8r reciever and a zyx s2 controler what do i do to use s-bus thanks a million inadvance

15th January 2020 - 1:37 pm

Very useful, thanks. Could you also add clear explanation of DSSS FSK etc.. Its quite hard fathom the issue of immunity between transmitters. I don't think knowing the protocol helps this even though i suspect that transmitters are layering (some of?) the above protocols on FrSky for example doesn't seem to say in adverts what scheme, if any, is being used to ens immunity between transmitters, just tells you the data protocol. GFSK by itself would be pro interference. Possibly DSSS is implied. Or possibly i have no idea what i am talking abut. Thanks!, Richard

AZIH ZIN

2nd November 2019 - 9:56 am

ed sbus port

MS?

ra Devo line of RX/TXs is missing. Why?

Thanks!

BRAD

22nd November 2021 - 5:53 pm

Ha ha! You're funny.

23rd July 2018 - 9:22 pm

With regards to crossfire which I would like to use, which flight controllers work with there c protocols.

OSCAR

24th July 2018 - 6:43 pm

Any FC's that runs Betaflight/Cleanflight/iNav/KISS and a few others, and you nee spare UART.

JONN SCOTT

19th July 2018 - 11:48 pm

ne "TX and RX Latency" paragraphs info for SPEKTRU The DX6 is last century's and Valve TX's speeds.

, seems kind of bias to use a dx6i against other mode x6i in years of course unless its used that is a old cont are 11ms or 22ms. Pretty much its like trying to race a type A car against a modern honda, of course the new car will win. This is one thin not like about the industry, it is very hard to get true data because almost everyone does testing is bias towards one or the other, Im trying to find true up to date data, is actually on the market that you can buy today not what you would have bought 1 ago. Im looking for a new controller I have a spektrum which is good and all, but I v something with more channels I just dont see me paying $600 for a 12 channel or for a 18 channel controller, So im looking at data for taranis, but kinda hard to find

argue and never give the other props where props are due. Its stupid really, why e
the data out there if its bias. what for hits.

ALEX

15th March 2018 - 12:57 pm

Hello Oscar

Is there any latency difference between RX with FrSky D8 and FrSky D16-8ch ?

LUKE

4th June 2018 - 1:26 pm

protocols used between the transmitter and transmitt

module in the X12S / X10S uses iXJT protocol that is
JT used to comunicate to the external modules?
Horus seems quite slow when its advertised as having

que to the X10S or should the X12S be the same?

n

some tests for these at the moment, stay tuned for nev
on the blog :)

TOM GARING

11th July 2018 - 7:29 am

Does the signal wire alone, communicate the PWM signal from the Rx to t
servo or controller, not needing a second (ground wire)?

controller and a SportBEC to power the receiver, an I have been instructe
staff to cut the two power wires from the aabertooth unit and only plug in t
(yellow signal wire, as the red and brown power wires are not required sin
using the SportBEC unit to provide rx power.
Is this logical?
Tom Garing

ALAN PALMER - SWINDON, WILTS, ENGLAND

14th March 2018 - 5:38 pm

Dear Oscar
14-03-18

as 7. I am now pushing 80 and thought about making a

conversant with electronics cad cam 3D routers and th
, I fully understand Lipos brushless etc however I hav
tc regarding to quads
sterday and found it enthralling educational and addicti
t out some sections and read and learn them in bed a
gards – ALAN

Missing here is the PXX from FrSky.

JASON LIQUORI

18th February 2018 - 10:32 pm

Hello, Thanks for this great info. I'm a total novice in this world but looking for some guidan
possible to control multiple devices from one RC controller? Say i have 1 Futaba re ar

switch between the RXs or are they all 1-1?

Thanks in advance for any feedback.

OSCAR

6th March 2018 - 5:21 pm

I am not sure about other systems, but I know you can control multiple RX from on TX.

THADDEUS

31st January 2018 - 11:11 am

Hi wonderful article

– which is DSMX then can i add a flysky receiver to it'

as DSMX but as I don't have a Spectrum I want to us

QX100.

ky micro receiver and solder it to the current Qx100 F

lly best to contact the manufacturer to find out about t

ould be able to connect it to any spare UART on the b

JI HYUNJONG

23rd January 2018 - 2:53 pm

Hi Oscar.

This is my first comment on your blog.

I saw your video on how to check latencies, And I've got a question.

But I think that if a firmware of the transmitter is tuned fine, a sampling rate of the switch is than sticks' on the transmitter, I guess.
So I think that you need to test with signals of sticks again.

VARUN

24th September 2017 - 10:32 am

Hi oscar,
Thank you for the info. I just wanter to know if frsky receiver would work with flysky transmi am asking this because in racercube aio, there is frsky receiver. Now since frsky transmitte costly, i want to use flysky transmitter. So is there any setup to connect frsky receiver to flig controller of racercube.

mpletely new to this!

nsive article Oscar. Really helps N00bs such as myse
x and Rx protocols specific to each other? I have a Fr-
protocol would communicate with it, out of the 3 fr-sky protocols you've mentioned.
Thanks in advance,
Bharath Nagarajan

OSCAR

24th October 2017 - 2:48 pm

ALI

7th November 2017 - 3:19 am

If you get the IRANGE IRX4 it should work…
banggood.com/IRangeX-IRX4-2_4G-CC2500-NRF24L01-A7105-CTRF6936-4-IN-Multiprotocol-STM32-TX-Module-With-Case-p-1197130.html?cur_warehouse=CN

RAHUL

3rd September 2017 - 11:37 am

Hello Oscar, I need more information about FHSS, TFHSS, SFHSS, FASST AND FASTES
Actually I am looking to have transmitter from futaba for atleast 5-10 years. Prsently I'm on
cause of the funds. Need some help.

you. What are the chances a Graupner GR-12SH SU
ntroller using the DSMX port?

er gear. Might be a question for either the FC or TX manufacturer

ANDREW HIGNIGHT

1st October 2018 - 7:16 am

It's works fine because it's not an inverted uart. I've used Graupner for over 2 year
quads and you just need to hook up the Sumd signal to an uninverted uart a sp

KUMAR

30th July 2017 - 5:26 pm

It's very informative. BTW Will FrSky X4R receiver support normal flight controller boards li
2.1?
Thank you

OSCAR

3rd August 2017 - 2:48 pm

X4R? Yes, X4R-SB? no it doesn't.
KK2 doesn't support PPM or SBUS, only PWM. So you could connect the 4 PWM
channels plus 1 SBUS, so it's not enough to control a

f your write ups and the knowledge and research that

d then I will get to the question part. I am a Spektrum
X6i to the latest version of the DX8. I am a scratch build
20+ under my belt,,,,fixed wing, a quad and a tricopter (both using KK2 FC's). On all units I
using Orange receivers. That is my history in short. I am now about to make the jump to or
and building a 6″ Alien quad getting most of the parts from Rotor Riot. In pre-study,,,,I feel t
grasp just about all with the exception of the twist that me being a Spektrum user throws in
build. And also coming from no telemetry background adds another stress-or.
All of the build videos are built (pardon the pun) around using the Frsky system. I have four
nothing with a Spektrum addendum.

(1) those that send the information back to the transmitter {to which I assume one can prog
audio alerts while you are FPV'ing?} and (2) those that utilize an OSD {is this a separate ac
board to the KISS FC ? } that overlays the telemetry data in your FPV feed to be seen as y
with your goggles/headset.
I think you can begin to see my last bit of consternation. I need to get this down before I he
the buy/build process. I look forward to your thoughts and/or directions

OSCAR

4th July 2017 - 6:31 pm

Telemetry generally refers to the flight info sent from the RX to TX. I don't know mu
about Spektrum stuff, but Frsky supports Telemetry.

would require an external OSD board to work if you are
minimOSD. There are also other FC that has OSD inte
flight F3.

are a great help.

Marty,

I use to be a Spektrum owner because that's what all the fixed wing guys flew at m
Field. And as you know Spektrum's great for line of site flying as long as your usin
(as of this response DSM or DSM2 is no longer supported by Spektrum/Horizon H
have flown fixed wing & helicopters for many years & build as well, but with the hol
moving into FPV Flying Spektrum doesn't keep up. Times have changed with the
miniaturization of components in multi-rotor copters to keep weight down & eas

well & went with FrSky.

Although Spektrum has produced two serial receivers one operating on 3.3VDC & other on 5VDC … they're BULKY & HEAVY compared to other manufacturers. I di a bit of research myself & went with FrSky Taranis X9D+ … not only is everything (RX's) less expensive but it just works so seamlessly together. Now the FrSky is an Tx system so programming the radio is different from Spektrum & can be daunting times but there's so much more you can do!

Such brings in the topic of Telemetry … Spektrum came out with a separate modul years back (T1000) with the release of the DX-8 but hasn't done much to promote longer sells it on Horizon's website. Originally when the Telemetry module came ou bundled DX-8 release it had a few sensors for ESC amperage & temperature. Add sensors were available for altitude (basically a barometer) and talk of a GPS — bu egardless FrSky has a gamut of different sensors and rent things with the information.

njoyable move for me from Spektrum to FrSky but one o radios is, that to me at least, the signal strength is ro erference issues that I use to have with Spektrum. The you can get a DSMX module & still use your existing

Firstly, thanks for your posts.

I would like to know if any SBUS receiver would works in any compatible SBUS transmitter

As an example, I am wondering if SBUS receiver could be linked to my Radioling AT9S.

Thanks in advance.

Regards.

25th June 2017 - 4:10 pm

SBUS is a receiver to FC protocol, it has nothing to do with the TX.

It depends on which SBUS receiver you are talking about.

WIM

15th May 2017 - 12:23 pm

Dear Oscar,

I just want to double check. Is Futaba Sbus compatible with FrSky Sbus?

I mean can I use Futaba sensors on a FrSky receiver? And vise versa?

With kind regards,

Wim

T 2.4GHz 8-Channel Air Integrated Telemetry Receive

mitter capable

OSCAR

15th May 2017 - 2:14 pm

I don’t think so. Flysky and spektrum are not compatible.

ALEX ZARENIN

27th February 2017 - 4:00 am

In my recent projects i have been using DSM2 satellite receiver without the “main” receiver receiver outputs nice digital codes for each channel using standard UART protocol. I testec satellite receivers – the only difference I found was the “framing” code – the special code th put at the start and end of the channel packet. Some details of the protocol are available in DIYDrones post diydrones.com/profiles/blogs/orange-rx-satellite-receiver-and-lemon-rx-uai enabled-receiver.

Regards,

–Alex

SAMEER

22nd December 2016 - 2:48 pm

oth module……how we connect the bluetooth module so that i control the quadcopptr …..plzhelp

w. Finally I found a good explantion that answered my

8th November 2016 - 10:36 pm

HI Oscar9 cap radio with a spektrum DMSX DM* transmitter module installed. In the aircrat a Spectrum AR 600 receiver. I cannot get the Fail Safe to operate properly. Everything else Once everything is bound, I turn off the transmitter and the motor in the aircraft goes to high throttle instead of low throttle?

I called Horizon and they told me that this arrangement won’t work… I have flown t an

Richard

JORGE HERRERA

31st October 2016 - 1:34 pm

Hello Sir ; Is the Graupner MC- 32 Pro transmitter compatible with Spectrum Airmod modul order to use MC-32 radio with Spectrum DSM2 transmition protocol . I know they are with weatronic and IFS protocols . Best regards . Jorge Herrera.

JAMES

13th October 2016 - 3:24 am

misleading. You are using a non-standard definition o , in contrast with parallel communication, multiple sign e stream. In this sense, both PPM and PCM are serial, at PPM is analog serial and PCM is digital serial. As su which I think you mean “with error checking”). Error ch protocol, i.e. SBUS, XBUS, etc.

es.

back, my writing was terrible. I will update this as soo can.

RANDALL M.

25th October 2016 - 6:26 pm

Hello,

I am an electrical engineer with college degree. There is nothing wrong with his

standard.

Oscar wrote: “Serial Receiver is a digital loss-less protocol that uses only 3 wires (power, ground) for multiple channels. As the name suggests this type of receiver r serial port on the flight controller. ”

A serial bus with only on wire to carry the serial data stream is called half duplex. F duplex is the bus type that used to be provided on computers (remember the DB9 connector with a Tx and Rx pin). Serial simply means the data arrives in a stream. means the data bits are broken into parts and sent simultaneously.

The other day I looked at the pinout for the Pixhawk on the arducopter website and to recall that the uart bus had Txd and RxD pins or full duplex.

X that will transmit in either PCM or PPM select ably fr ng back to the mid 80s (Futaba J series -just fyi) They were much more expensive and the PCM system had considerable delay, similar to the Specktrum reboots c

RC for a while but the new protocols are a bit confusin e area that is still confusing to me is where the protoc e old Futaba CAP9 mentioned earlier has a FrSky tele e to convert the PPM signal from the TX to ACCST. Th connects to the RX (D8R-2+). What are the protocol output choice from the RX?

Thanks for taking the time to help us understand.

Mark

ANGEL

14th February 2017 - 3:40 pm

DANNY

28th December 2015 - 7:58 pm

Hi Oscar,

This is the first time I've built the Quadcopter and I want to control my quad via the PC. I se in Google alot but I can't find the good way to control. I've download the multiwii joystick firı and used the gamepad to control via RF UART SI4463 (I use one module RF which is conı with PC via USB-TTL CP2102 to make the transimmter, the other one is connected with UA in Crius board). In GUI MultiWii, the sensors data was sent to PC through COM port (2 moc RF is working correctly), but I pressed the button from gamepad to control and I saw nothir happened in my quad – motors is not armed. I don't know What I missed?. I've thought tha ɔtte pin in crius but nothing worked. Could you give me

Naze32

(high -> low AND low -> high) i.e. a simple Transistor

Peter

OSCAR

3rd December 2015 - 12:22 pm

check out second half of this post… I shared how people make the inverter SBUS.

28th October 2015 - 8:15 pm

Hi Oscar: I have a orange 3ch S-bus long antenna and I have a Dx6 Spektrum radio for my 250: the rx have a problem after a crash and I would like replace it: I use the S-bus for use shot on my esc kiss12A and find a alternative rx with S-bus DSM2/DSMX to my DX6 but no Orange rx: you can give me a tip for a rx S-bus of good quality DSM2 / DSMX Spektrum compatible? thanks and greetings: Odino from 'Italy.

OSCAR JR.

8th October 2015 - 1:25 pm

Hi Oscar,

thanks for sharing this valuable information. I've just missed a word about Tx/Rx based on

ost questions, but I'll try.

g with. It's a Graupner MC-20 with a HoTT GR-24L an

Pixhawk px4 and a Vector FC +OSD.

ivers to bind, but there is no signal to the FC boards to

itter settings, the FC board setting or something else.

I have tried to get answers from the FC board, the radio manufacture and the usergroup for still don't have any answers to get the system working. Maybe you can help.

MARTIN C

23rd September 2015 - 11:51 pm

Hi Oscar,

an AR9020 receiver instead so I can use my DX9 radio…. does the AR9020's srxl port act sbus port or will I need to get a PWM harness to connect the two?

MICHAEL

22nd September 2015 - 6:42 pm

Hi Oscar Im building a blackout mini h quad and I'm using a spektrum dx8 transmitter with a spektrum Rx.
Can I us the ppm setup on the naze acro 32 flight controller or do I have to connnect all thc wires the connect the RX to the flight controller?

OSCAR

um devices… just a quick google on Ar8000 spektrum PPM encoder use connect PPM to Naze32…

d from scratch and have a naze full mullet board and a e as you have pictured on the top of this section. I dor of fact I didn't know I had an Ibus until reading your b using clean flight to configure the board. I could have bought a ready to fly quad and spent than I have so far but wouldn't have learned anything. My question to you is will my fly sky and reciever work with the naze 32 and how would I wire it to the naze.

OSCAR

21st September 2015 - 4:01 pm

+ and – on the RX, and RC pins on the Naze to the signal pins on the RX, you only connect as many channel as you need up to 8…. choose “parallel PWM” in receive mode.

MAXOZ

15th September 2015 - 9:48 pm

i have radiolink at9 and r9d. Should i buy frsky sbus to cppm converter for use ppm ?

DAVID

28th August 2015 - 4:56 am

Hi Oscar

n flying rc planes for years. In building my first I’m goir
ading the spec. sheet it is compatible with cppm and h

nt. IF using my JR SA600 72mhz radio which is a “ppn
proper input ?
question properly… But I hope you can understand it

have to invest in a new 2.4g system.

Hi David

so is your receiver able to output in CPPM (aka PPM) mode?

Naze32 can only take CPPM / PWM without any additional converters.

GABRIEL

13th August 2015 - 5:16 pm

I am new in multicopters.

Don´t know if it is a stupid question, but i have the flame whell f450 with naza m v2, i am try control the naza m v2 with arduino, can i use a pwm signal in entrances x1,x2,x3,x4?

OSCAR

17th August 2015 - 9:27 am

Hi, probably… but why don't you follow the traditional method of controlling, ie usir radio transmitter and receiver? It would be easier and safer if you are new.

ANTHONY

8th July 2015 - 7:38 pm

ed on the Alias and jjrcx6 tarantula but I wanted to bui ally pretty fun to build also for what they recommend f on I got a Graupner mz18 and I'm trying to figure out if used sumd and the electronics are dsm2 and dsmx. C er reciver. Basically trying to bind that lemon 6 channe er any help would be awesome got 4 days to see if I lil I know that works with rtf quads stuff sorry for long po

Hi Oscar

I have four 18a Kiss ESC's that I want to install and run oneshot with. I have the modded (v Deviation 4.0.1) Devo 10 radio and both the Walkera rx1002 and the rx601 receivers. I'm u PWM currently with an OpenPilot CC3D evo FC with an 8 pin receiver port, flexi port, main usb hid port and usb vcp ports. I have the option in OpenPilot to choose PWM, PWMsync o Oneshot125. Can I do this with my current PWM tx/rx and CC3D FC? Do I need a PPM sig utilize the oneshot programming?. If so can I use a converter of some sort in conju n w

Thanks for your time and for providing a wealth of experience and information for us all.

Easy – E

ALF SKAAR

10th August 2015 - 9:08 am

Hi Oscar

Vortex Setup Devo 10 (Deviation) and RX703A PPM and Fail Safe is on CH5

see for more info

rcgroups.com/forums/showpost.php?p=31893045&postcount=1718

Alf

ot on my escs flashed with blhely suite, but on my cc3
he oneshot. my answer is: using a ppm encoder can i
if it's possible i can use in the wizard panel the ppm re
ed escs. release 15 of open pilot gcs.

Good evening Oscar,

This is my first comment on your blog.

Quite new to multicopters, I am the happy owner of a DJI F450 with Naza V2 since last Sep and I recently decided to build a 250 racer. This is what brought me to your blog earlier this I've got to say it is truly a GOLD MINE who ever is interested in this hobby (like me) and I c hardly leave this website. Thank you very much for all this information you share with us. Everything is clearly explained and well documented so it helps a lot to understand ' RC

of questions in my head but no answer. Guess what today's post is about? Bam!, RC proto
You're genius man, you can read my mind.
OK, I have a few questions here:
Is it right to say that PCM and PWM are the same thing?
About Serial protocols, you say that the Naze32 "can read UART input, but cannot accept i
one" which is required for S Bus. So I guess the Naze32 should not be compatible with S B
That is not what you say in your post "Choose flight controller for quadcopter and hexacopt
I missing something?
Thanks again for sharing your knowledge with us,
Tom.

r mind :D
es of radio signal, which i forgot to mentioned. I have a

PM, but it's digital coded and supposedly more reliable
ecade now in RC hobby, But I still haven't seen anyone

Naze32, but you just need a SBUS-PPM converter, or
ill catching up with the latest technology development

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